IN THE CLAIMS:

1. (Currently amended) A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical dispersive instrument configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser;

a detector configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

a bandwidth calculation apparatus configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a multivariable equation employing predetermined calibration variables specific to the optical dispersive instrument, to calculate an actual bandwidth parameter.

2. (Original) The apparatus of claim 1 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

3. (Original) The apparatus of claim 1, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum defining a content of the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

4. (Previously presented) The apparatus of claim 1 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second

spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

5. (Previously presented) The apparatus of claim 2 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

6. (Previously presented) The apparatus of claim 3 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

7. (Previously presented) The apparatus of claim 4, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

8. (Previously presented) The apparatus of claim 5, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

9. (Previously presented) The apparatus of claim 6, further comprising:

the predetermined variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

10. (Previously presented) The apparatus of claim 7, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

11. (Currently amended) The apparatus of claim 8, further comprising:

the value of the actual bandwidth parameter is calculated from the equation [[=]] $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

12. (Currently amended) The apparatus of claim 9, further comprising:

the value of the actual bandwidth parameter is calculated from the equation [[:]] ~~estimated BW parameter =~~ $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

13. (canceled) A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor providing a first output representative of a first spectrum width measurement as measured by the optical bandwidth monitor and a second output representative of a second spectrum width measurement measured by the optical bandwidth monitor; and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter.

14. (canceled) The apparatus of claim 13 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

15. (canceled) The apparatus of claim 13, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

16. (canceled) The apparatus of claim 13 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

17. (canceled) The apparatus of claim 14 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

18. (canceled) The apparatus of claim 15 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

19. (canceled) The apparatus of claim 16, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

20. (canceled) The apparatus of claim 17, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

21. (canceled) The apparatus of claim 18, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

22. (canceled) The apparatus of claim 19, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated actual BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

23. (canceled) The apparatus of claim 20, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated actual BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

24. (canceled) The apparatus of claim 21, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated actual BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output of FWX''M or EX''.

25. (Previously presented) A photolithography light source comprising:

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical dispersive instrument configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser;

a detector configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

a bandwidth calculation apparatus configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a multivariable equation employing predetermined calibration variables specific to the optical dispersive instrument.

26. (Original) The apparatus of claim 25 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

27. (Original) The apparatus of claim 25, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

28. (Previously presented) The apparatus of claim 25 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

29. (Previously presented) The apparatus of claim 26 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

30. (Previously presented) The apparatus of claim 27 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

31. (Previously presented) The apparatus of claim 28, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

32. (Previously presented) The apparatus of claim 29, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

33. (Previously presented) The apparatus of claim 30, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

34. (Currently amended) The apparatus of claim 31, further comprising:

the value of the actual bandwidth parameter is calculated from the equation

[[=]] $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured representative spectrum width of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

35. (Previously presented) The apparatus of claim 32, further comprising:

the value of the actual bandwidth parameter is calculated from the equation

$K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

36. (Currently amended) The apparatus of claim 33, further comprising:

the value of the actual bandwidth parameter is calculated from the equation

[[=]] $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

37. (canceled) A photolithography light source comprising:

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor providing a first output representative of a first spectrum width measurement as measured by the bandwidth monitor and a second output representative of a second spectrum width measurement measured by the optical bandwidth monitor; and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter.

38. (canceled) The apparatus of claim 37 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

39. (canceled) The apparatus of claim 37, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

40. (canceled) The apparatus of claim 37 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

41. (canceled) The apparatus of claim 38 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

42. (canceled) The apparatus of claim 39 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where $X \neq X''$ and $X' \neq X'''$.

43. (canceled) The apparatus of claim 40, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

44. (canceled) The apparatus of claim 41, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

45. (canceled) The apparatus of claim 42, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

46. (canceled) The apparatus of claim 43, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

47. (canceled) The apparatus of claim 44, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX''.

48. (canceled) The apparatus of claim 45, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX''.

49. (Currently amended) A photolithography tool comprising:

a laser light source comprising:

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical dispersive instrument configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser[[,]];

a detector configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

a bandwidth calculation apparatus configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a multivariable equation employing predetermined calibration variables specific to the optical dispersive instrument.

50. (Original) The apparatus of claim 49 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

51. (Original) The apparatus of claim 49, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

52. (Previously presented) The apparatus of claim 49 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

53. (Previously presented) The apparatus of claim 50 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

54. (Previously presented) The apparatus of claim 51 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second

spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

55. (Previously presented) The apparatus of claim 52, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

56. (Previously presented) The apparatus of claim 53, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

57. (Previously presented) The apparatus of claim 54, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

58. (Currently amended) The apparatus of claim 55, further comprising:

the value of the actual bandwidth parameter is calculated from the equation~~:~~

[[=]] $K^*w_1 + L^*w_2 + M$,

where w_1 the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

59. (Currently amended) The apparatus of claim 56, further comprising:

the value of the actual bandwidth parameter is calculated from the equation~~:~~

[[=]] $K^*w_1 + L^*w_2 + M$,

where w_1 the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

60. (Currently amended) The apparatus of claim 57, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

[[=]] $K*w_1 + L*w_2 + M$,

where w_1 the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX''.

61. (canceled) A photolithography light source comprising:

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor providing a first output representative of a first spectrum width measurement as measured by the optical bandwidth detector and a second output representative of a second spectrum width measurement measured by the optical bandwidth detector; and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter.

62. (canceled) The apparatus of claim 61 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

63. (canceled) The apparatus of claim 61, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

64. (canceled) The apparatus of claim 61 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum

of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

65. (canceled) The apparatus of claim 62 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

66. (canceled) The apparatus of claim 63 further comprising:

the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

67. (canceled) The apparatus of claim 64, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

68. (canceled) The apparatus of claim 65, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

69. (canceled) The apparatus of claim 66, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

70. (canceled) The apparatus of claim 67, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

71. (canceled) The apparatus of claim 68, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

72. (canceled) The apparatus of claim 69, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

73. (Currently amended) A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical dispersive means configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser;

detector means configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

bandwidth calculation means, configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a

multivariable equation employing predetermined calibration variables specific to the optical dispersive means.

74. (original) The apparatus of claim 73 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

75. (original) The apparatus of claim 73, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

76. (Previously presented) The apparatus of claim 73 further comprising:

the optical dispersive means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

77. (Previously presented) The apparatus of claim 74 further comprising:

the optical dispersive means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

78. (Previously presented) The apparatus of claim 77 further comprising:

the optical dispersive means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

79. (Previously presented) The apparatus of claim 76, further comprising:
the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

80. (Previously presented) The apparatus of claim 77, further comprising:
the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

81. (Previously presented) The apparatus of claim 78, further comprising:
the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

82. (Previously presented) The apparatus of claim 79, further comprising:
the value of the actual bandwidth parameter is calculated from the equation
$K*w_1 + L*w_2 + M$,
where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

83. (Currently amended) The apparatus of claim 80, further comprising:
the value of the actual bandwidth parameter is calculated from the equation[[:]]
$K*w_1 + L*w_2 + M$,

PAGE 24/44 * RCVD AT 10/2/2007 6:07:10 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/12 * DNIS:2732885 * CSID:858 385 6025 * DURATION (mm-ss):07-14

where w_1 the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

84. (Previously presented) The apparatus of claim 81, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K*w_1 + L*w_2 + M$,

where w_1 the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

85. (canceled) A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitoring means for providing a first output representative of a first spectrum width measurement as measured by the bandwidth detector and a second output representative of a second spectrum width measurement measured by the optical bandwidth detection means; and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating calculate an actual bandwidth parameter.

86. (canceled) The apparatus of claim 85 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

87. (canceled) The apparatus of claim 85, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

88. (canceled) The apparatus of claim 85 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

89. (canceled) The apparatus of claim 86 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

90. (canceled) The apparatus of claim 87 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

91. (canceled) The apparatus of claim 88, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

92. (canceled) The apparatus of claim 89, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

93. (canceled) The apparatus of claim 90, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

94. (canceled) The apparatus of claim 91, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated actual BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

95. (canceled) The apparatus of claim 92, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated actual BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

96. (canceled) The apparatus of claim 93, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated actual BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output of FWX''M or EX'''.

97. (Currently amended) A photolithography light source comprising:

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter means comprising:

an optical dispersive instrument means configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser[[;]];

detector means configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further

configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

a bandwidth calculation means configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a multivariable equation employing predetermined calibration variables specific to the optical dispersive instrument means.

98. (Original) The apparatus of claim 97 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

99. (Original) The apparatus of claim 97, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

100. (Previously presented) The apparatus of claim 97 further comprising:

the optical dispersive instrument means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

101. (Previously presented) The apparatus of claim 98 further comprising:

the optical dispersive instrument means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second

spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

102. (Previously presented) The apparatus of claim 99 further comprising:

the optical dispersive instrument means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

103. (Previously presented) The apparatus of claim 100, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

104. (Previously presented) The apparatus of claim 101, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

105. (Previously presented) The apparatus of claim 102, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

106. (Previously presented) The apparatus of claim 103, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

107. (Previously presented) The apparatus of claim 104, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

108. (Previously presented) The apparatus of claim 105, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

109. (canceled) A photolithography light source comprising:

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitoring means for providing a first output representative of a first spectrum width measurement as measured by the bandwidth detector and a second output representative of a second spectrum width measurement measured by the optical bandwidth detection means; and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter.

110. (canceled) The apparatus of claim 109 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

111. (canceled) The apparatus of claim 109, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

112. (canceled) The apparatus of claim 109 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

113. (canceled) The apparatus of claim 110 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

114. (canceled) The apparatus of claim 111 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

115. (canceled) The apparatus of claim 112, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

116. (canceled) The apparatus of claim 113, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

117. (canceled) The apparatus of claim 114, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

118. (canceled) The apparatus of claim 115, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX''.

119. (canceled) The apparatus of claim 116, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX''.

120. (canceled) The apparatus of claim 117, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K*w_1 + L*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX''.

121. (Currently amended) A photolithography tool comprising:

a laser light source comprising:

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter means comprising:

an optical dispersive instrument means configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser[[;]];

detector means configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

a bandwidth calculation means configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a multivariable equation employing predetermined calibration variables specific to the optical dispersive instrument means.

122. (Original) The apparatus of claim 121 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

123. (Original) The apparatus of claim 121, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

124. (Previously presented) The apparatus of claim 121 further comprising:

the optical dispersive instrument means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

125. (Previously presented) The apparatus of claim 122 further comprising:

the optical dispersive instrument means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

126. (Previously presented) The apparatus of claim 123 further comprising:

the optical dispersive instrument means is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

127. (Previously presented) The apparatus of claim 124, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

128. (Previously presented) The apparatus of claim 125, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

129. (Previously presented) The apparatus of claim 126, further comprising:

the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

130. (Currently amended) The apparatus of claim 127, further comprising:

the value of the actual bandwidth parameter is calculated from the equation

[[=]] $K*w_1 + L*w_2 + M$,

where w_1 is first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

131. (Previously presented) The apparatus of claim 128, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K*w_1 + L*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

132. (Currently amended) The apparatus of claim 139, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K*w_1 + L*w_2 + M$,

where w_1 is the first measured <u>spectrum width</u> representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

133. (canceled) A photolithography light source comprising:

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitoring means providing a first output representative of a first spectrum width measurement as measured by the optical bandwidth monitoring means and a second output representative of a second spectrum width measurement measured by the optical bandwidth monitoring means; and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter.

134. (canceled) The apparatus of claim 133 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM").

135. (canceled) The apparatus of claim 133, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX").

136. (canceled) The apparatus of claim 133 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

137. (canceled) The apparatus of claim 134 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

138. (canceled) The apparatus of claim 135 further comprising:

the bandwidth monitoring means is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

139. (canceled) The apparatus of claim 136, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

140. (canceled) The apparatus of claim 137, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

141. (canceled) The apparatus of claim 138, further comprising:

the precomputed calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second outputs for a calibration spectrum.

142. (canceled) The apparatus of claim 139, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

143. (canceled) The apparatus of claim 140, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

144. (canceled) The apparatus of claim 141, further comprising:

the value of the actual bandwidth parameter is calculated from the equation:

estimated BW parameter = $K^*w_1 + L^*w_2 + M$,

where w_1 = the first measured output representative of FWXM or EX' and w_2 is the second measured output representative of FWX''M or EX'''.

145. (Currently amended) A method for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

utilizing an optical dispersive instrument configured to disperse energy in the light emitted from the laser, converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser[[;]];

recording a spatial variation or a temporal variation of the wavelength distribution of the light energy;

providing an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

calculating an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a multivariable linear equation employing predetermined calibration variables specific to the optical dispersive instrument.

146. (Currently amended) A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a narrow band light source input to the bandwidth meter comprising:

an optical dispersive instrument configured to disperse energy in the light emitted from the laser, the dispersion converting the emitted light from a wavelength domain into a spatial domain or temporal domain based on the wavelength distribution of the light energy from the laser[[;]];

a detector configured to record a spatial variation or a temporal variation of the wavelength distribution of the light energy, the detector further configured to provide an output signal based on the recorded spatial variation or temporal variation, wherein the output signal comprises a first spectrum width and a second spectrum width; and

a bandwidth calculation apparatus configured to calculate an actual bandwidth parameter utilizing the first spectrum width and the second spectrum width as part of a

multivariable equation employing predetermined calibration variables specific to the optical dispersive instrument.

147. (Original) The apparatus of claim 146 further comprising:

the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the light source ("FWXM").

148. (Original) The apparatus of claim146, further comprising:

the actual bandwidth parameter is a width between two points on the spectrum defining a content of the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the light source ("EX").

149. (Previously presented) The apparatus of claim 146 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the light source ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

150. (Previously presented) The apparatus of claim 147 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the light source ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

151. (Previously presented) The apparatus of claim 148 further comprising:

the optical dispersive instrument is an etalon and the first spectrum width is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the light source ("EX'") and the second spectrum width is representative of at least one of a second FWX''M or EX''', where X≠X'' and X'≠X'''.

152. (Previously presented) The apparatus of claim 149, further comprising:
the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

153. (Previously presented) The apparatus of claim 150, further comprising:
the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

154. (Previously presented) The apparatus of claim 151, further comprising:
the predetermined calibration variables are derived from a measurement of the value of the actual bandwidth parameter utilizing a trusted standard, correlated to the occurrence of the first and second spectrum widths for a calibration spectrum.

155. (Currently amended) The apparatus of claim 152, further comprising:
the value of the actual bandwidth parameter is calculated from the equation
[[=]] $K*w_1 + L*w_2 + M$,
where w_1 [[=]] <u>is</u> the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

156. (Previously presented) The apparatus of claim 153, further comprising:
the value of the actual bandwidth parameter is calculated from the equation
$K*w_1 + L*w_2 + M$,.

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

157. (Previously presented) The apparatus of claim 154, further comprising:

the value of the actual bandwidth parameter is calculated from the equation $K^*w_1 + L^*w_2 + M$,

where w_1 is the first measured spectrum width representative of FWXM or EX' and w_2 is the second measured spectrum width representative of FWX''M or EX'''.

158. (Currently amended) A bandwidth meter comprising:

an optically dispersive instrument, dispersing the energy comprising a portion of the output of a[[n]] light source, input into the bandwidth meter, into a spatial or temporal domain according to the wavelength distribution of the energy of the light source;

a detector, recording, respectively, the spatial or temporal variation of the wavelength distribution of the energy and providing an output signal based upon the recorded spatial or temporal variation;

a first calculation apparatus configured to calculate the width of the wavelength distribution of the energy, respectively, in the space or time domain, based upon, respectively, the spatial or temporal variation of the wavelength distribution of the energy recorded by the detector, and the first calculation apparatus further configured to convert, respectively, the spatial or temporal distribution into the wavelength domain according to the optical properties of the dispersive instrument; and

a second calculation apparatus configured to utilize at least one width of the wavelength distribution of the energy in the wavelength domain, calculated by the first calculation apparatus, and the second calculation apparatus configured to apply the at least one width as an argument of a multivariable equation having predetermined calibration variables specific to the ~~optical~~ light source, the optically dispersive instrument, the detector, and the at least one width taken as an argument.

159. (Original) The apparatus of claim 158 further comprising:

the first calculation apparatus and the second calculation apparatus are the same calculation apparatus.

160. (Original) The apparatus of claim 158 further comprising:

the at least one width is at least two widths selected from the group comprising a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the light source ("FWXM") and ("FWX'M"), and a width between two points on the spectrum defining a content of the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the light source ("EX'' ") and ("EX''' "), where X≠X' and X''≠X'''.

161. (Original) The apparatus of claim 159 further comprising:

the at least one width is at least two widths selected from the group comprising a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the light source ("FWXM") and ("FWX'M"), and a width between two points on the spectrum defining a content of the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the light source ("EX'' ") or ("EX''' "), where X≠X' and X''≠X'''.

162. (Original) The apparatus of claim 158 further comprising:

wherein the multivariable equation is evaluated to calculate an actual bandwidth parameter descriptive of the spectral distribution of the energy output by the light source selected from the group FWX*M, EX**.

163. (Original) The apparatus of claim 159 further comprising:

wherein the multivariable equation is evaluated to calculate an actual bandwidth parameter descriptive of the spectral distribution of the energy output by the light source selected from the group FWX*M, EX**.

164. (Original) The apparatus of claim 160 further comprising:

wherein the multivariable equation is evaluated to calculate an actual bandwidth parameter descriptive of the spectral distribution of the energy output by the light source selected from the group FWX*M, EX**, wherein X* may equal either X or X' and X** may equal either X'' or X'''.

165. (Previously presented) The apparatus of claim 158 further comprising:

wherein the multivariable equation is evaluated to calculate an actual bandwidth parameter descriptive of the spectral distribution of the energy output by the light source selected from the group FWX*M, EX**, wherein X* may equal either X or X' and X** may equal either X'' or X'''.